DOCUMENT RESUME

ED 422 852 IR 018 993

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TITLE Teaching in Control.
PUB DATE 1998-00-00
NOTE 7p.; In: Distance Learning '98. Proceedings of the Annual Conference on Distance Teaching & Learning (14th, Madison, WI, August 5-7, 1998); see IR 018 976.
PUB TYPE Guides - Classroom - Teacher (052) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Community Colleges; *Distance Education; *Instructional Design; Instructional Effectiveness; *Instructional Materials; *Interactive Video; *Material Development; Teacher Education; Two Year Colleges; Workstations
IDENTIFIERS Metropolitan Community Colleges MO

ABSTRACT

This paper begins by summarizing basic assumptions about effective teaching and learning, noting that these assumptions apply to all teaching, regardless of the delivery mode and/or technology used. Instructional design principles are then discussed in terms of the planning, preparation, and organization of interactive video-based teaching materials, and critical aspects of presentation are presented. Major points that should be made in teacher training and support are listed, based on a training program developed by the Metropolitan Community Colleges of Kansas City, Missouri. Guidelines for control of student focus are provided. The paper concludes with a description of the function and features of a teacher-controlled distance education teaching station, including a diagram of a sample teaching station. (AEF)

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ED 422 852

Teaching in Control

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Basic Assumptions

- Effective teaching is to assist an active learner. The teacher must engage the student at multiple levels: motivation, information gathering, organization, visualization, analysis, meaningful application/use; although included, effective teaching is not simply the presentation of facts or logic.
- Learning is the measure of effective teaching.
- The ability to teach is the measure of learning. We refer to this process as testing, where the roles of the teacher and student temporally reverse.

These basic assumptions apply to all teaching, regardless of the delivery mode and/or technology used. The integration of technology and interactive video (one-way or two-way) distance education have produced special opportunities for effective teaching. However, to exploit these opportunities, careful design and use criteria need to be established for the development and use of teaching materials and facilities.

Design Principles

Planning, Preparation and Organization of Teaching Materials

Teaching on camera is very different than teaching in a classroom. Generally, the presentation is limited by the amount of information that can be effectively presented on the video monitors. The use of computer generated graphics and text, usually maximizes the effective information density on a video monitor. However, because video monitors have much lower resolution then computer monitors, the following principles should be employed.

- Voluminous material must be carefully abstracted into an outline type format and then converted into relatively small well-designed video bytes.
- Good design requires good video readability which include the following considerations:
  - Background and text color combinations should emphasizes brightness contrast rather than color contrast.
  - Fonts should not be cluttered with shadows or small appendages (Geneva is good).
  - Fonts sizes should be 44 pt or larger.
  - Edge clearances of at least 7.5% of the screen width on each side, top and bottom.
  - Colors that "bleed" on video monitors (e.g. Red) should be avoided.
  - Background patters which can slow the rate of information recognition should be avoided.

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❖ Evaluation of video readability requires the use of a video monitor rather than a computer monitor. The able to read material on a video monitor when concentrating on the screen is not a sufficient test. The material must be easily and quickly readable. When a student is taking notes and/or completing an interactive study guide (Cyrs, 1997), they are frequently required to shift concentration between the video monitor and the note taking activity. A student should be able to read the screen with quick glances instead of requiring unnecessary time to discern words, letters or numbers which run together because they are too small or have insufficient definition with respect to the background.

❖ The thread(s) of continuity that connects the video bytes are (in order of importance):
- The interactive student study guide (Cyrs, 1997)
- The class presentation/discussion/interaction
- The text

❖ Good teaching is a learning activity for both the student and the instructor. Dynamic instructors acquire new insights and new ideas for presentations with almost every class. Therefore:

❖ Continuous updating of presentation materials, including the interactive student study guide, is essential.

❖ Teachers should master presentation software so that changes and improvements can be made in a timely fashion. We are all subject to sudden inspiration. The ability to make a quick edit to correct an error or to enhance a presentation is highly desirable.

❖ Do not plan a demonstration or experiment that you have not personally done successfully several times in the distance education environment. If there is no strong reason for the demonstration/experiment to be live on TV, consider a prerecorded video tape. Video tape provides the opportunity to rerun the demonstration or experiment in slow motion or even frame by frame to enhance the discussion.

❖ Video is a visual technology.
- Change the image on the monitor frequently (when appropriate).
- Use a variety of image types (text, graphs, charts, pictures, video tape, student(s), models, etc.).
- Use supporting images and/or demonstrations of the concepts being presented: animation and/or slow motion; real-time movies/videos (with copyright permission); create and use out-of-studio activities video tapes (informational field trip); pre-video-taped demonstration (experiments, hazardous activity, etc.).
- Use geometric shapes as structures to illustrate concepts with multiple parts (Cyrs, 1997).

❖ Technology fails! Have a backup plan for any part of a live presentation which cannot be omitted.

Presentation

- Body language/eye contact
  - Look directly into the camera lens frequently.
  - Be yourself, Be expressive, Use gestures.
  - Use interesting and/or entertaining props but practice ahead of time.
  - Use good posture (front lighting may be inadequate if head and/or shoulders are tilted downward).

- Pace the presentation to allow student response and/or to use the interactive study guide.

- Promote student interaction.
  - Open class with ice breaker activity or story.
  - Create an environment of positive support for responses.
  - Invite/require response from individuals in the studio and at the remote sites.
  - Show enthusiasm for the material being presented and its significance.

Teacher Support

MCC has developed a policy that no instructor is permitted to teach on television without formal training in the use of television teaching methods. Initially the distance education unit at the University of Missouri at Kansas City (UMKC) was used. Subsequently, for several years, a consultant was hired to train faculty. Currently, we have developed our own training program using MCC and UMKC staff.

Major points in a training should include:

- Introduction to the technology (this provides the faculty with a vision of what is possible)

- Demonstrations of good teaching techniques and method of promoting student interaction

- Techniques to develop an interactive study guide

- Characteristics of quality video bytes (examples good and bad)

- The use of colors, clothing selection and props

- Hands on use of chromakey with computer, document presenter, video tape and cameras

- Preparation and presentation a short video class segment (critique focus on positive factors)

Following the training most instructors are enthusiastic about their possibilities. However, success of the training is mixed. Most faculty (and administrators) do not appreciate the level of work and time that is required to do a good job.

In an ideal world, an instructor developing a video class would be released from teaching responsibility for a full semester. Also, an interested person(s) would be available to collaborate, review, and encourage the faculty during the development the course. In the real world, an instructor is give a few hours of overload and works alone. This approach generally will not produce anything other than a talking head presentation.

During early stages of development, instructors are encouraged to schedule time in the teacher controlled classroom to try out and critically review their initial work. Technical support people are made available to assist. Also, instructors are asked to practice in the classroom before the initial class.

Class Signature Video Tape (a one minute class opening) should be prepared for each class. Such tapes prepare the students as a call to class and can also be used to set the mood for a class. A signature video should be recorded on video tape of sufficient length that the instructor is not required to turn it off during class presentation. The tape should have black video and silent audio recorded on it entire length before recording the Class Signature at the beginning of the tape.

A large face digital clock synchronized with the broadcast facility is very useful for starting and ending classes on time.

Audio can be a major problem in any production. The areas of concern include:

- Instructor audio (type of microphone, position/location, instructor posture/ movements, speaking rate)
- Student audio from broadcast facility (type of microphone, activation, position/ location, student generated -noise, background noise, feedback)
- Remote students audio (type of microphone, activation, position/location, student generated noise, background noise, feedback, interface to broadcast signal)

Control of Student Focus

- Video monitors can be used to focus and limit material in a timely sequential fashion.
- Video bytes should be organized into a hierarchic which supports the main concept(s). When possible enter and leave each level of the hierarchic through the same video byte. This will assist the student to place the information contained in a group of video bytes into system of related information. An example of this technique would be an artist who starts with an overview, temporally focuses on a small detail and then return to the overview before addressing the next detail.
- The interactive study guide should contain large scale graphics which assist the student to visualize the video byte hierarchic and integrate the video bytes into a coherent presentation.
- The use of chromakey permits the presenter to enter and leave the field of focus without breaking visual contact with background information. This tends to maintain continuity in the presentation.

Clearly, a well planned presentation is not a trivial activity. Careful thought, organization, anticipation of student questions and time is required. It is not easy, but it is very rewarding in professional satisfaction.

Teaching Station

A teaching station has only one function—to assist a teacher to teach. A teacher controlled distance education teaching station is no different. The design of such a station should incorporate usable technology with teacher friendly interfaces and should provide the following attributes:

- The appearance of simplicity by minimizing the teacher operated controls. Technical anxiety is proportional to the number of visible knobs, switches, meters and lights. The essential teacher operated controls are a) image selection, b) camera(s) operation, c) remote site audio response (e.g., telephone or telephone bridge) and d) VCR.
- Simple monitoring of video and audio signals.
- Convenient access to non-confusing controls during presentations.
- Usable surface(s) for books, notes, computer, demonstration set-ups.
- Internet connectivity for use during class presentations.
- Acceptable environment for students, teacher and technology:
  - Adequate room lighting to detect true colors (4100°K fluorescent lamps work well)
  - Adequate front and back lighting of teacher station (halogen track lights work well to augment under lighted areas and chromakey surfaces)
  - Acceptable studio temperature and humidity levels
  - Low noise level (mechanical, adjacent spaces, people)

The design and construction of a teaching station can take many forms. A sample is presented in the diagram on the following page. Two stations of this design have been constructed (in-house) and are being used by MCC. One station is connected to a conventional TV broadcast system and the second is interfaced with to a two way interactive videoconferencing network. Each station incorporates all of the design features above as well as teacher operated chromakey capabilities.

Final Words

Video distance education is one of the great professional opportunities of our time. However, it is not for the faint-of-heart or someone who expect compensation for each hour of work. I am not aware of any school or college that compensates with money for every hour spent in the development of a well prepared distance education course. A major part of the rewards of this type work is the recognition of colleagues and the appreciation and respect of students. If one does not value the professional satisfaction from such a challenge, one should seek other activities. Distance education requires enthusiasm, very long hours and hard work. The rewards can be great!

Reference

Cyrs, Thomas E., 1997, Teaching at a Distance with Merging Technologies, Center for Educational Development, MSC 3 CED, P.O. Box 0001, Las Cruces, New Mexico 88005.

Acknowledgement

Sincere thanks to my colleagues at Penn Valley Community College: Mitchel Green, Video Engineer; Victor Garcia, Video Production Specialist; John Buchannan, Electronics and Video Technician; Ethel Fleming, Administrative Assistant; and Karen Sorensen, Instructional Media Coordinator.

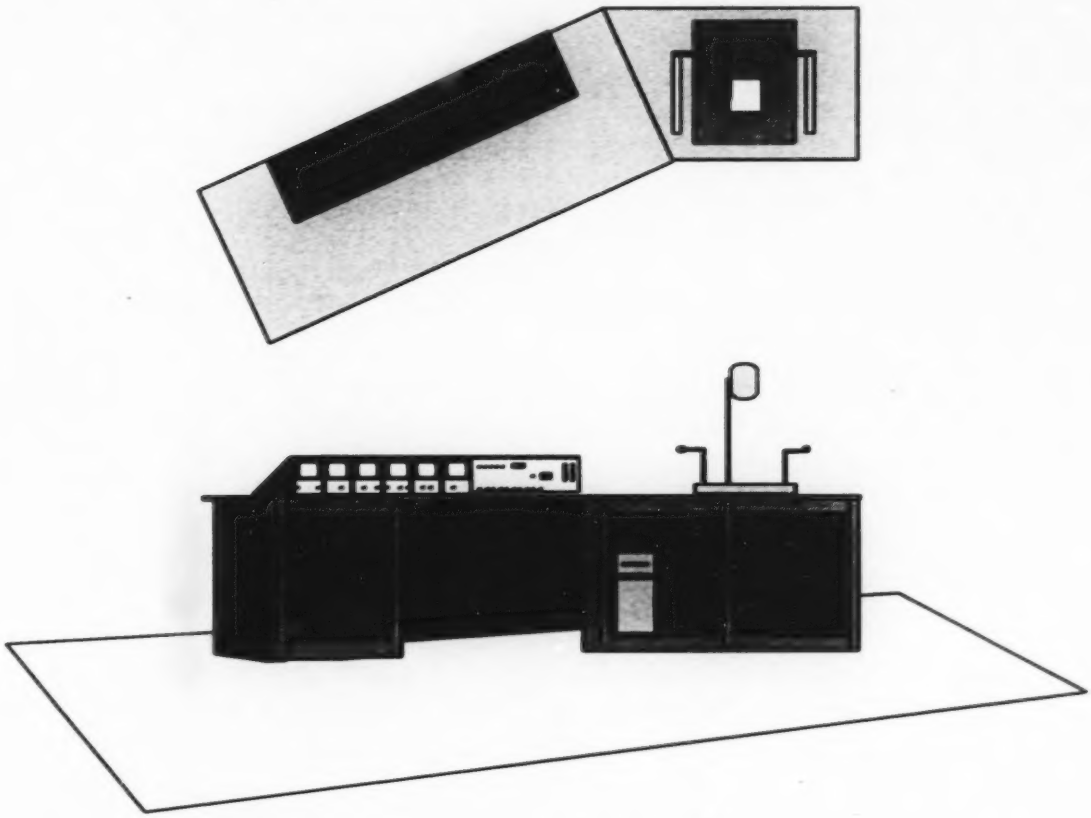

Figure 1. Teacher controlled distance education teaching station.